

## ABSTRACT OF THE DISCLOSURE

The object of the present invention is to provide an apparatus capable of measuring wavelength dispersion characteristic and other characteristics by using only a single fiber pair.

In order to achieve said object, the apparatus according to the present invention includes a variable wavelength light source 12 for generating a variable wavelength light, the wavelength of which is variable, a first light modulator 15 for inputting into the first optical fiber transmission line 32 the first incident light obtained by modulating the variable wavelength light by the frequency of the electrical signals inputted, a first optical/electrical converter 22 for converting by the optical/electrical conversion process the first outgoing light having penetrated the first optical fiber transmission line 32, a fixed wavelength light source 21 for generating a fixed wavelength light, the wavelength of which is fixed, a power source (signal source) 25 for generating reference electrical signals of given frequencies, a second light modulator 23 for inputting in the second optical fiber transmission line 34 the second incident light obtained by modulating the fixed wavelength light by the frequency  $f_m$  of the reference electrical signal and a second optical/electrical converter 16 for converting by the optical/electrical conversion process the second outgoing light having penetrated the second optical fiber transmission line 34 and for outputting into the first light modulator 15. When the result of optical/electrical conversion of the first outgoing light and the reference electrical signals are available, it is possible to compute wavelength dispersion characteristic and other characteristics by comparing their phases.

Figure 1